REVIEWS.

A MONOGRAPH ON DISEASES OF THE BREAST; THEIR PATHOLOGY AND TREATMENT, WITH SPECIAL REFERENCE TO CANCER. By W. ROGER WILLIAMS, F.R.C.S. London: John Bale & Sons, 1894.

MR. WILLIAMS, whose previous work in this same direction has been noteworthy, has now given to the diseases of the breast a broad and comprehensive consideration which makes his monograph the most valuable contribution of recent years to our knowledge of the subject.

While his conclusions may differ somewhat from those of many of his readers, there can be no question of the care with which he has collected the facts which form his premises, nor of the interesting and scholarly manner in which he has set them forth.

The chapters on the ontogeny and phylogeny of the gland; on its morphology, secretory anomalies and variations, either congenital or acquired; on its hypertrophy in both females and males, include many examples of the author's application of modern scientific methods to the problems of surgery.

In the space at the reviewer's disposal it will not be possible to give the arguments employed in many cases, but a *résumé* of the conclusions as to some of the most important subjects cannot fail to be interesting to those who have not seen the book.

Schwinzinger's suggestion that removal of the ovaries should be practised to bring about atrophy of the mammæ in order to prevent the development or the recurrence of cancer is considered in the chapter on involution and atrophy, and is very properly negatived. According to most oöphorectomists, extirpation of the ovaries in adult human females is seldom followed by marked mammary atrophy or the loss of feminine qualities, other than those of menstruation and procreation. Keppler, however, distinctly states that in most of his castrated patients the breasts subsequently wasted and tended to revert to the male type. The truth seems to be that when the essential sexual organs are removed early in life, before the secondary sexual characters have become thoroughly well established, the latter subsequently abort; whereas when the removal of these organs is deferred until the secondary sexual characters have become well established then the latter generally persist, provided that the patient is still in the prime of sexual life.

Polymastia are regarded as true reversions to ancestral types, and it is considered as a significant fact that supernumerary mammary structures appear only in definite positions, which almost invariably correspond with those occupied normally by the glands of polymastic animals. "On the whole," says Darwin, "we may doubt if additional mammæ would ever have been developed in both sexes of mankind, had not man's early progenitors been provided with more than a single pair."

Mammæ erraticæ, in which the abnormal glands occupy anomalous positions, are regarded as due to reversion to ancestral arrangements much more ancient than those reproduced in ordinary cases of polymastia, and the author thinks that his investigations prove that highly specialized structures like the mammary gland, with its nipple and appendages, never develop suddenly in any human being, except in response to ancestral hereditary influence. He rejects the opposing argument based on the presence of supernumerary teeth and mammæ in the walls of ovarian dermoid cysts, for the reason that while he admits that the sequestration of a portion of the cutaneous matrix, at an early stage of development, enables us to understand the presence of hairs, sebaceous follicles, sweat-glands, and other normal dermal structures in the walls of such cysts, he does not believe that highly specialized structures like mammæ and teeth can be thus produced from a cutaneous inclusion, but that it is far more possible that in such cases we have to do with very imperfect parasitic fœtuses, in which only the teeth or mammæ have survived.

Gynecomastism presents an example of what he calls the latent hermaphorditism of every human being. Castration when practised prior to puberty hardly ever causes hypertrophy of the mammary glands; hence Oriental eunuchs, who are castrated at a very early age, are never affected in this way. Similarly, castration of adults over thirty years of age is hardly ever followed by mammary hypertrophy. It is only when testicular destruction supervenes during the heyday of sexual life that gynecomastism subsequently ensues. As previously mentioned, in women, the effect of removal of the ovaries, under similar conditions, is to determine mammary atrophy. These apparently contradictory facts, he thinks, are rendered intelligible by reference to the principle of "correlated variability." It is a very remarkable fact that in every female all the secondary male characters, and in every male all the secondary female characters, exist in a latent state, ready to be evolved under certain conditions. It seems perfectly warrantable to assume that the normal condition of the mammæ in each sex is determined by correlation with the essential sexual organs. When the latter are destroyed the correlated integrated force determining mammary development also fails, so that the latent tendency to develop the opposite sexual characters then becomes manifest. His views as to the varieties of neoplasms of the breast must be passed over with the exception of those which relate to the extraordinary frequency with which the reproductive organs in females are attacked—nearly 70 per cent of all neoplasms in women. His theory in regard to this may be given in his own words:

> "From the fact that both of these parts are subject to remarkable post-embryonic developmental changes, it may be inferred that they are normally rich in cells, which still retain much of their embryonic capabilities for growth and development. It is probably owing to this peculiarity that they are so much more prone to originate neoplasms than other parts of the body.
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> "The following considerations tell in favor of this view: It may be said of neoplasms in general that they arise from archiblastic (epithelial) structures much more frequently than they do from parablastic (connective tissue) ones. Thus, of 13,824 primary neoplasms, 72 per cent. originated from the archiblast, and only 28 per cent. from the parablast. In the breast archiblastic neoplasms predominate to a still greater degree, for I have found that no less than 95.74 per cent. of all such neoplasms have this origin, whereas only 4.26 per cent. arise from the parablast. Now, of all the tissues of the

body, the archiblastic ones have on the whole departed less from the primordial type than any others, hence their cells still retain their primitive powers of growth and reproduction in a higher degree than others. It is to this that I attribute the greater proneness of archiblastic tissues to originate neoplasms under pathological conditions."

He believes that both on *a priori* grounds and on the existing evidence the germ-theory of cancer should be rejected unhesitatingly, and thinks that "the microbe of cancer has not yet been discovered, because in all probability it does not exist." As to contagion, there is not a single authentic instance of the transmission of cancer from one individual to another, and the alleged successes in the attempts to transmit it to lower animals should, he thinks, be accepted only in a tentative sense.

He classifies mammary cancer as "acinous" (94 per cent.), and "tubular" the "duct cancer" of Bland Sutton and others. This classification finally shelves the ancient term "encephaloid," for when the villous papillomata, tubular cancers, myxomata, carcinomata myxomatodes, and sarcomata—hitherto generally confounded under this head—have been assigned to their proper groups, nothing remains to which this obsolete term can properly be applied.

Local recurrence of cancer he regards, with Heidenhain and the majority of surgeons to-day, as due to incomplete ablation of the primary growth; *i. e.*, not as a real reproduction of the disease, but as a continuation of it in the surviving unextirpated fragments. His figures show that while cancer is not a senile disease, it is most infrequent at the time of life when the forces of growth, development, and reproduction are in greatest activity. In both sexes the disease begins to be frequent as soon as the period of perfection has been attained—*i. e.*, after the thirty-fifth year; during middle age and the decline of life the liability to it increases, until about the fifty-fifth year; after which period it becomes markedly less frequent, and increasingly so as age advances.

The chapter on the geographical distribution of cancer is an interesting one, but the facts do not yet justify positive conclusions. The author thinks that the explanation of these variations must be sought in the conditions of life peculiar to the respective populations. "Generally speaking, the cancer mortality is lowest where the struggle for existence is hardest, the density of population greatest, the tubercle mortality highest, the average duration of life shortest, the general mortality highest, and where sanitation is least perfect—in short, among the industrial classes; whereas, among the wealthy and well-to-do—where the standard of health is at its best, and life is easiest, and among the agricultural community, there the cancer mortality is highest." Other things being equal, there are, in his opinion, no more potent factors in the causation of cancer than high feeding and easy living.

The family history of 134 women with mammary cancer seems to show that the disease is correlated with, *a*, pulmonary tubercle, *b*, insanity, *c*, apoplexy, *d*, arthritic troubles, and furthermore, and strange to relate, with great longevity on the part of the parents and equally marked fecundity. It might be thought that the number of cases does not justify such sweeping conclusions, but Mr. Williams states that although they are based solely upon facts derived from the study of the family histories of women with cancer of the breast, they are nevertheless, as he has ascertained, equally valid for cancer of all parts of the body. As to the prevalence of cancer, he considers its position unique. He estimates that in 1840 there were 4500 persons suffering from cancer in England and Wales, whereas now there are about 40,000. No other disease can show anything like such an immense increase.

The influence of trauma and of pre-existing inflammatory lesions he minimizes, contrary to the widespread belief both in the profession and among the laity, and concludes his careful review of this part of the subject as follows: "The outcome of all this is that intrinsic causes are much more important factors in the origination of cancer than extrinsic ones, which are by no means its necessary antecedents. In the vast majority of cases the outbreak of this disease appears to be entirely spontaneous; that is to say, it cannot be attributed to the immediate action of any appreciable extrinsic cause whatever. The occasional transformation of innocent into malignant growths must be admitted, but he thinks this very different from admitting that such neoplasms are specially prone to develop malignantd isease. This is disproved by the extreme rarity of the coincidence. My investigations show that non-malignant mammary neoplasms are less liable to originate cancer than are the glandular elements of the breast itself."

Transition from one species of malignant new formation to another has never been verified.

His mode of operation involves the complete extirpation of the breast with its various prolongations—too commonly neglected—the removal of part, or the whole, of the sternal portion of the pectoralis major and the thorough cleaning out of the axillary fat and glands. This is now the practice of the majority of surgeons everywhere, yet while so excellent an authority as Sutton says "The axilla should not be opened unless there is good reason to believe that its lymph-glands are infected," it seems proper to emphasize the above teaching which certainly has behind it the weight of modern authority.

The latter chapters of the book are no less complete and instructive, and deal fully with the less common forms of malignant diseases and with the inflammatory and suppurative lesions of the breast.

The monograph is one deserving the highest commendation even from those who do not accept the author's pathological views, as it is written in the true scientific spirit and bears witness on every page to wide reading, industrious and painstaking compilation, and original thinking. It is a most valuable addition to the literature of the subject. J. W. W.

Die Causale Behandlung der Tuberculose. Experimentalle und Klinische Studien. By Von Edwin Klebs.

The Treatment of Tuberculosis. By Edwin Klebs.

This treatise of Klebs makes a book of 630 pages, and contains much of interest on the pathological anatomy of the disease. It is divided into two parts, and in each part there are several chapters. The object of the book is to show the favorable result of the treatment of tuberculosis by a substance which he has obtained from Koch's tuberculin. The substance derived from tuberculin he first called tuberculocidin, but by using a purer form of tuberculin, which he obtained by growing the tubercle bacilli on liquid media, he produced a tuberculocidin of greater purity and efficacy, which he calls antiphthisin. The antiphthisin is patented. The theories of the general pathology of disease which he derived from its anatomical study are in accord with the supposed mode of action of antiphthisin and its curative effect.

In the introduction he says the idea that tuberculosis represents a disease from which recovery is possible conforms with the facts shown by its anatomical study. Nothing is more common at autopsies than various evidences of spontaneous recovery from tuberculosis. In various parts of the body conditions are found which admit of no other interpretation than that the disease has existed here and has been recovered from. His attention was early called to the varying results which were reported of the treatment with tuberculin. In some of the reports it seemed to exercise a definite control over the disease. In other cases there was no such control. It seemed probable to him that these variations might depend upon the composition of the tuberculin. Tuberculin should not be considered as a definite chemical substance, but as a mixture of various substances, some of which might exert a favorable action, while other substances contained in it either had no action or an injurious one. He made the attempt to separate from the tuberculin those substances which exert a favorable action on the disease from the others. Koch's theory that the favorable action of the tuberculin consisted in production of extensive necrosis, with a walling up of the tubercle bacilli in the necrotic material, did not seem to him to correspond with the facts. He also thought that the second idea of Koch's, that the tubercle bacilli themselves were not influenced by the tuberculin, was not certain. Most of the theories of the action of the tuberculin come from observations made on lupus, and are not applicable to all forms of tuberculosis.

In the first chapter there is a very good historical review of tuberculosis. He speaks of his own early work on the disease and the various facts derived from its anatomical study which led him to believe in its infectiousness. He was early led to the belief that the alimentary canal was frequently the source from which infection takes place. He repeated the inoculation-experiments of Villemin, using the peritoneal cavity for the seat of inoculation, and was able to follow the course of the disease from this to other organs.

While in Berne he was struck with the frequency of miliary tuberculosis in the cattle-herders on the Berne overlands. These people live during the entire summer on the Alps, and their food consists entirely of milk and bread. The food seemed to be the only possible source of infection, and he was able to trace it to the milk. He had already shown the identity of the pearly disease of cattle with tuberculosis, and found it common in these herds. Anatomical investigation of these cases of miliary tuberculosis almost always showed the absence of old tuberculosis foci such as were described by Buhl, and he was led to regard the disease as one conveyed directly from the cattle to man by the use of infected milk.

In his earlier work on tuberculosis he thought he had discovered the specific organisms of the disease in small, round, or oval organisms which he found in the process.

In the second chapter, relating to the source of disease, he takes up the